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**INL helps organize, host nuclear graphite meeting**

WEST YELLOWSTONE, Mont. — Today, scientists from around the world will descend on West Yellowstone, Mont., for a three-day conference on the use of graphite in nuclear reactors. Idaho National Laboratory researcher Will Windes is organizing the 10th International Nuclear Graphite Specialists Meeting, and the Department of Energy's Next Generation Nuclear Plant (NGNP) project, which the INL helps lead, is the primary sponsor.

"This is the main meeting for anyone working in nuclear graphite," Windes said. "All the major players are coming."

About 100 researchers — from China, Japan, South Africa, South Korea, the United States and many European countries — will attend, and they will give more than 60 talks and poster presentations. Both of these numbers are record highs for the annual conference, Windes said.

The scientists will have a lot to talk about: graphite plays a key role in many current and future nuclear reactor designs. A number of commercial plants in the United Kingdom, for example, use graphite to moderate fission processes, slowing neutrons down enough to sustain a chain reaction. The NGNP and other proposed future high-temperature, gas-cooled reactors would be similarly graphite-moderated. They would also use graphite, which has a huge heat-absorbing capacity, to keep nuclear fuel at safe temperatures during off-normal events.

Talks and posters at the meeting will span a wide range of nuclear graphite issues, from basic research to applied engineering designs.

"We'll cover the full spectrum," Windes said. "The goal is to increase our understanding of graphite in all nuclear applications."

The graphite core of a high-temperature, gas-cooled nuclear reactor encounters an extreme environment. Therefore, many conference presentations will address the property changes and behavior of graphite in extreme conditions, including how well different types of the material — graphite varying in source, processing methods and/or microstructure — withstand high radiation doses and temperatures that can exceed 1,000 degrees Celsius.

Windes will be giving a talk along these lines, as will fellow INL researcher Blaine Grover and Oak Ridge National Laboratory's Joe Strizak. The three scientists will discuss the Advanced Graphite Capsule project, an ambitious new INL-led effort that seeks to determine how graphite will perform in the NGNP and other future graphite-moderated reactors. Over the next decade, six AGC experiments will characterize property changes of more than 3,000 different graphite samples, gauging how they respond to extreme heat, mechanical stress and neutron irradiation.

The INL scientists will report news about the first AGC experiment to their colleagues at the meeting. The pre-irradiation properties of the first round of AGC graphite samples have been measured. And, earlier this month, INL researchers placed the samples into the lab's Advanced Test Reactor for irradiation.

"The graphite world is very eager to hear about that," Windes said.

INL is one of the DOE's 10 multiprogram national laboratories. The laboratory performs work in each of DOE's strategic goal areas: energy, national security, science and environment. INL is the nation's leading center for nuclear energy research and development. Day-to-day management and operation of the laboratory are the responsibility of Battelle Energy Alliance.

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